

WE CLAIM:

1. A distributed router for multicast packets, comprising:

5 a fabric composed of a multiplicity of units each having respective user ports and at least one fabric port, and internal fabric links between fabric ports, said fabric constituting a single network node;

10 wherein each unit includes at least one bridge connected to at least one of the respective user ports and to each fabric port of the unit and further includes at least one router connected to said bridge;

15 wherein a unit which receives multicast packets intended for forwarding from another unit in the fabric bridges those multicast packets to a fabric port of this unit; and

wherein a unit having a local user port or ports from which said multicast packets are to be forwarded replicates said multicast packets as necessary and routes said multicast packets to said local user port or ports.

20 2. A distributed router according to claim 1 wherein each unit includes a bridge for each of a plurality of domains and on receipt of multicast packets pertaining to a particular domain bridges those packets on said particular domain.

25 3. A distributed router according to claim 2 wherein the domains are virtual local area networks (VLANs).

30 4. A distributed router according claim 1 wherein each unit includes forwarding rules that prescribe the forwarding of a given packet to a given fabric port if the unit has available information which indicates that another unit connected to said given fabric requires that given packet.

5. A network unit for use in a fabric of units capable of distributed multicast routing wherein the fabric presents only one routing hop between ingress of multicast packets to the fabric and egress of said packets from the fabric, said network unit comprising:

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a multiplicity of user ports for connection to an external network;

at least one fabric port for connection to another unit in the fabric;

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at least one bridge connected to at least some of said user ports and to each fabric port;
and

a router interfaced with said bridge;

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wherein said unit is organized on receipt of multicast packets intended for forwarding from another unit in the fabric to bridge those multicast packets to a fabric port of this unit; and

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wherein said unit is organized, on receipt at a fabric port of multicast packets intended for forwarding from user port or ports of said unit, to replicate said multicast packets as necessary and to route said multicast packets to said local user port or ports.

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6. A network unit according to claim 5 wherein said unit has a multiplicity of bridges each connectible to at least some of said user ports and connected to each fabric port, each bridge pertaining to a respective bridging domain.

7. A network unit according to claim 6 wherein each domain is a virtual local area network.

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8. A network unit according to any of claims 5 wherein the unit has forwarding rules that prescribe the forwarding of a given packet to a given fabric port if the unit

has available information which indicates that another unit connected to said given fabric requires that given packet.

9. A method of routing multicast packets in a fabric of network units, comprising:

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receiving multicast packets at an ingress unit in the fabric;

bridging said packets across the fabric to an egress unit;

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replicating said multicast packets as necessary in said egress unit; and

routing said multicast packets in said egress unit, whereby said packets cross said fabric only once each.

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10. A distributed router, comprising:

a fabric composed of a multiplicity of units each having respective user ports and at least one fabric port, and internal fabric links between fabric ports, said fabric constituting a single network node;

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wherein each unit includes at least one bridge connected to at least one of the respective user ports and to each fabric port of the unit and further includes at least one router connected to said bridge;

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wherein a unit which receives multicast packets intended for forwarding from another unit in the fabric bridges those multicast packets to a fabric port of this unit;

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wherein a unit having a local user port or ports from which said multicast packets are to be forwarded replicates said multicast packets as necessary and routes said multicast packets to said local user port or ports;

wherein a unit which receives at a user port unicast packets intended for forwarding from another unit routes those packets to a fabric port of this unit; and

5 wherein a unit which receives at a fabric port unicast packets bridges those unicast packets to another port of that unit.

11. A distributed router according to claim 10 wherein each unit includes a multiplicity of bridges, one for each of a plurality of domains and on receipt of multicast packets pertaining to a particular domain bridges those packets on said
10 particular domain.

12. A network unit for use in a fabric of units capable of distributed unicast and multicast routing wherein the fabric presents only one routing hop between ingress of packets to the fabric and egress of said packets from the fabric, said network unit
15 comprising:

a multiplicity of user ports for connection to an external network;

at least one fabric port for connection to another unit in the fabric;
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at least one bridge connected to at least some of said user ports and to each fabric port;
and

25 a router interfaced with said bridge;

wherein said unit is organized on receipt of multicast packets intended for forwarding from another unit in the fabric to bridge those multicast packets to a fabric port of this unit;

30 wherein said unit is organized, on receipt at a fabric port of multicast packets intended for forwarding from user port or ports of said unit, to replicate said multicast packets as necessary and to route said multicast packets to said local user port or ports;

wherein the unit is organized on receipt of unicast packets at a user port and intended for forwarding from another unit to routes those packets to a fabric port of this unit; and

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wherein the unit is organized on receipt of unicast packets at a fabric port bridges those unicast packets to another port.

13. A distributed router according to claim 12 wherein each unit includes a multiplicity of bridges, one for each of a plurality of domains and on receipt of multicast packets pertaining to a particular domain bridges those packets on said particular domain.

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